Emission Summary

Permit Number: 969552P

Source Status: New☒ Modification☐ Expansion☐ Relocation☐ **Permit Status:** New☐ Renewal☐

PSD☐ NSPS☒ NESHAPs☐ **Previous Permit Number:** Construction _____ Operating _____

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-03-
	Actual	Potential	Allowable	Actual	Potential	Allowable	Net Change			
TSP	neg		0.41			0.1	+0.1	6/13/14	3	06-.02(2)
SO_2	neg		neg			neg	$+2.8 \times 10^{-3}$	6/13/14	3	14-.03(5)
CO	8.74		67.35			16.84	+16.84	6/13/14	5	40 CFR 60.4233(c)
VOC	0.26		1.74 combined			0.08	+0.08	6/13/14	5	40 CFR 60.4233(c)
NO_X	1.20					0.35	+0.35	6/13/14	5	40 CFR 60.4233(c)
CO_2e							+23	6/13/14	5	

* - Source of data

Allowable tons use the default 500 hr/yr operation per the Seitz memo.
Actual emissions CO, VOC, and NO_X calculated from EPA certification data; PM and SO_2 calculated from AP-42.
HC are assumed to equal VOC, though likely contains some non-VOC gaseous emissions such as methane.

The engine spec sheet shows the combination of NO_X and HC emissions to be comprised of approximately 82% NO_X and 18% HC. Based on this ratio, the individual NO_X and HC (VOC) allowable emission rates are estimated from the combined 0.43 tons per year allowable.

PERMITTING PROGRAM: JEF DATE: November 17, 2014

TN Dept. of Safety & Homeland Security

81-0039-01/968552P

Propane fired emergency engine for a generator.

Manfacturer	Cummins	
Model	GM 5.0L	
Year	Oct-13	
Rating	79	hp
	58.8629	kW
Fuel	LP	
Air:Fuel	14.8:1	
Firing	4SRB	
LP vapor	2500	Btu/ft^3
Fuel use	270	ft^3/hr
Heat input	675000	Btu/hr
	0.675	MMBtu/hr
Sulfur	15.000	gr/100 scf from Gas Processors Association Engineering Data Book

Potential to emit at 500 hr/yr

91.5 MMBtu/10^3 gal for propane

Pollutant	Factor ($lb/10^3$ gal)	Factor converted (lb/MMBtu)	Factor (gm/HP-hr)	Emissions (gm/hr)	Emissions (lb/hr)	Emissions (tpy)
PM	0.7	0.007650273			5.16E-03	1.29E-03
HC+NO_x			8.4	663.6	1.46	0.37
SO_2	0.1S	0.016393443			1.11E-02	2.77E-03
CO			50.2	3965.8	8.74	2.19

HC+NOx emission factors from EPA certification data, PM and SO2 from AP42, Table 1.5-1

Sulfur content based on LP Gas Specifications of commercial propane

GHGs from	CO_2 EF (kg/MmBtu)	CH_4 EF (kg/MmBtu)	N_2O EF (kg/MmBtu)		
LP combusion	61.46	0.003	0.0006	CO_2e (tpy) =	22.96

CO_2e (tpy) = {[(heat input MmBtu/hr)*(500 hr/yr)*(2.205 lb/kg)]/(2000 lb/ton)}*[(CO_2 EF kg/MmBtu)+(25*CH_4 EF kg/MmBtu)+(298*N_2O EF kg/MmBtu)]

CO_2e calculation has the global warming potentials (GWP) for CH_4 and N_2O incorporated. CH_4 = 25 and N_2O = 298

Emission factors are the default emission factors found in 40 CFR 98 (Greenhouse gas reporting rule), Tables C-1 and C-2.

Allowable emissions per 40 CFR 90.103 Table 1 (Phase 1, Class II)

Pollutant	Standard (gm/kW-hr)	Emissions (gm/hr)	Emissions (lb/hr)	Emissions (tpy)
NOx + HC	13.4	788.76286	1.74	0.43
CO	519	30549.8451	67.35	16.84

Pursuant to 40 CFR 60.4233(c)

	Standard (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)
PM	0.6	0.405	0.101

Pursuant to 1200-03-06-.02(2)

CONSTRUCTION PERMIT SUMMARY REPORT

Company Name: TNDoS&HS File Number: 81-0039 EPS Initials: JEF

Permit Number(s): 969552P Source Point Number: 01

Application Received (date): November 13, 2014 Application Complete (date): November 13, 2014

Air Quality Analysis Performed? Yes☐ No☒

Briefly describe the project: (new source, modifications) (what the process is) (type controls proposed) (emissions expected, qualitative) (replacing what sources) (background information)

New installation of an LP/propane fired generator set for emergency power. Products of combustion are the expected pollutants. The engine meets the emission standards in 40 CFR 90.103, as required by 40 CFR 60 Subpart JJJJ.

Rules Analysis

Title V☐ Cond. Major☐ Minor☒ Source category listed in 1200-03-09-.01(4)(b)1.(i)? Yes☐ No☒

Reason for PSD:	New source above ____ TPY	☐	Sig. increase in ____ emissions	☐	N/A ☒
Applicable NSPS:	40 CFR Part 60, Subpart JJJJ	☒	State Rule 1200-3-16-. _____	☐	N/A ☒
Applicable NESHAP:	40 CFR Part 61, Subpart _____	☐	State Rule 1200-3-11-. _____	☐	N/A ☒
Applicable NESHAP:	40 CFR Part 63, Subpart 4Z	☒	State Rule 1200-3-31-. _____	☐	N/A ☒

Other Applicable State Rules

TSP Emissions:	1200-3-	06	02(2)	☒	N/A ☐	NO_x Emissions:	1200-3-	07 -. 07(2)	☒ N/A ☒
SO_2 Emissions:	1200-3-	14	03(5)	☒	N/A ☐	Lead Emissions:	1200-3-	____ -. ____	☐ N/A ☒
CO Emissions:	1200-3-	07	07(2)	☒	N/A ☐	_____ Emissions:	1200-3-	____ -. ____	☐ N/A ☐
VOC Emissions:	1200-3-	07	07(2)	☒	N/A ☐	_____ Emissions:	1200-3-	____ -. ____	☐ N/A ☐

Visible Emissions from exhaust not to exceed 20 % opacity per Method 9 (Rule 1200-3- 5 -.01(1))

Visible Emissions from _____ not to exceed ____ % opacity per Method ____ (Rule 1200-3-___-.____)

Visible Emissions from _____ not to exceed ____ % opacity per Method ____ (Rule 1200-3-___-.____)

Comments: _____